Blood Pressure

- Measure blood pressure at every visit.
- The goal for blood pressure is less than 130/80 mmHg.
- Patients with hypertension $\geq$ 140/90 should receive drug therapy, lifestyle, and behavioral therapy.
- Elevated blood pressure is a major risk factor for cardiovascular and renal diseases, including stroke, coronary heart disease, heart failure, and kidney failure.
- A recent National Health and Nutrition Examination Surveys (NHANES) survey indicated that 27 percent of adults have a systolic BP $\geq$ 140 mmHg, diastolic BP $\geq$ 90 mmHg, or currently take antihypertensive drugs. Another 31 percent have pre-hypertension and are not on medication.
- The lifetime risk of developing hypertension among adults > 50 years of age is 90 percent.

Why is control of blood pressure important?

Hypertension contributes to the development and progression of chronic diabetic complications. Control of hypertension reduces the rate of progression of diabetic nephropathy and reduces complications of hypertensive nephropathy, cerebrovascular and cardiovascular disease.

Antihypertensive treatment has been shown to decrease the rate of mortality from 43 percent to 9 percent in the first 16 years after the development of diabetic nephropathy. Need for dialysis and transplantation was reduced from 73 percent of patients to 31 percent of patients in the same period.

In type 1 diabetes, persistent hypertension is often a manifestation of diabetic nephropathy. In type 2 diabetes, hypertension often is part of a syndrome including glucose intolerance, insulin resistance, obesity, dyslipidemia, and coronary artery disease (also known as the metabolic syndrome). Isolated systolic hypertension may occur in both types of diabetes and is due, in part, to inelasticity of atherosclerotic large vessels.

What are appropriate treatments for high blood pressure in someone with diabetes?

Lifestyle Modifications

Lifestyle modifications are the first therapy to be employed to treat hypertension, unless the need to reduce the level of hypertension is emergent. Modifications include:

- weight loss
- exercise
- limiting of dietary sodium to 100 mmol (2,300 mg) of sodium per day
- limiting alcohol consumption to no more than 1-2 drinks per day
- tobacco cessation

Individualized goal setting to attain a blood pressure of < 130/80 is recommended in the majority of patients. However, less stringent treatment goals may be appropriate for patients who are frail, elderly, experience adverse effects related to tight control such as falls, and those who have a short life expectancy due to comorbid conditions.

ACEI (angiotensin converting enzyme inhibitors)/ARBs (angiotensin II receptor blockers)
In patients with microalbuminuria or clinical proteinuria, ACEI and ARBs are indicated as part of the initial treatment plan. ACEIs and ARBs have an additional benefit to patients with diabetes in that they decrease the rate of progression of renal disease beyond what would be predicted by controlling their hypertension.

Additional Pharmacologic Treatment
If after four to six weeks of initial treatment blood pressure goals have not been reached, additional pharmacological treatment is indicated. Medications should be added in a stepwise fashion.

Conclusions from recent clinical trials (Antihypertensive and Lipid-lowering Treatment to Prevent Heart Attack Trial-ALLHAT) indicate the superiority of use of thiazide diuretics as first-line therapy in preventing cardiovascular disease and for their cost effectiveness. However, the presence of concomitant diseases (especially diabetes, vascular disease, fluid overload, etc.) should be considered when choosing medications. Information or advice about medications or treatment strategies for hypertension is available from a physician experienced in the care of patients with diabetes and renal disease.

ACEIs, ARBs, calcium channel blockers, and low dose diuretics are associated with fewer adverse effects on glycemic control, lipid profiles, and renal function than other anti-hypertension medications.

What are treatment goals for isolated systolic blood pressure in someone with diabetes?

For patients with isolated systolic blood pressure of > 180 mmHg, the goal is a blood pressure < 160 mmHg. For patients with systolic pressure between 160 and 179, the goal is a 20 mmHg reduction. Further lowering to 140 mmHg or less is appropriate if the initial reduction is tolerated.

References:

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